

(No Model.)

2 Sheets—Sheet 1.

I. T. WASHBURNE.

PNEUMATIC COTTON ELEVATING SYSTEM.

No. 559,237.

Patented Apr. 28, 1896.

Fig. 1.

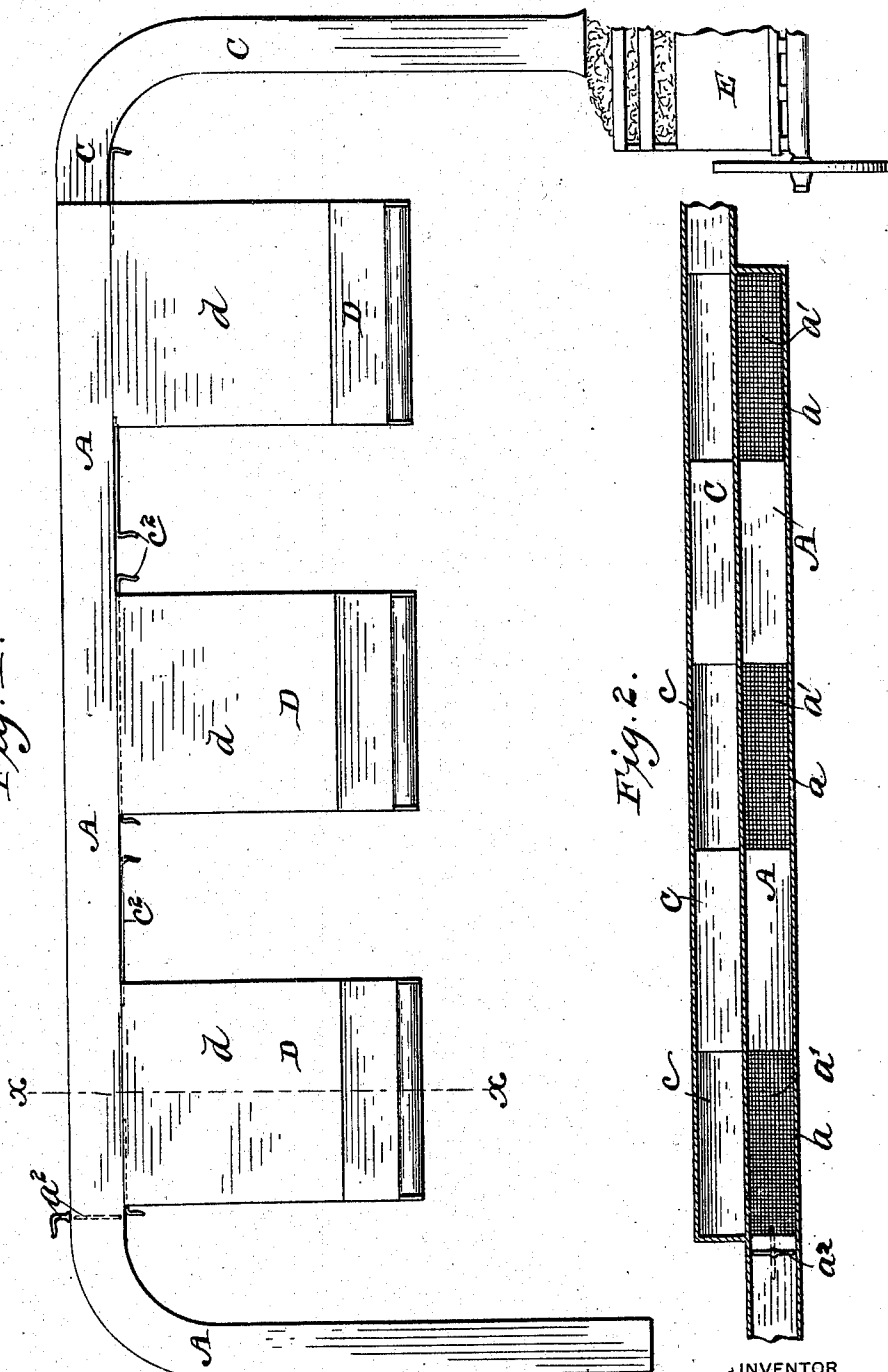
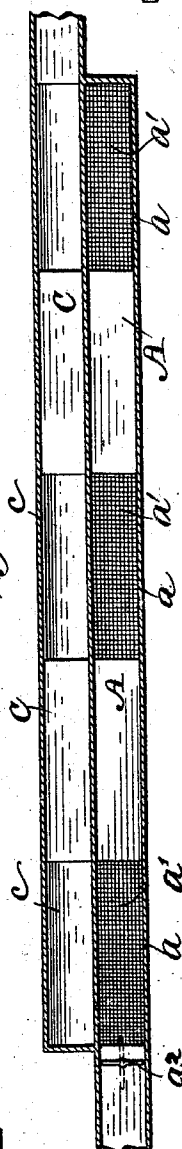


Fig. 2.



WITNESSES

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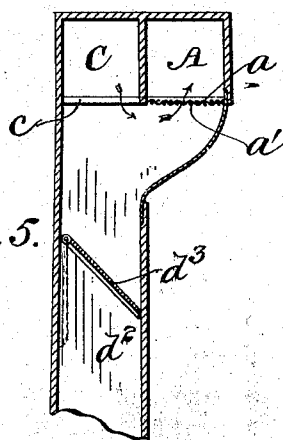
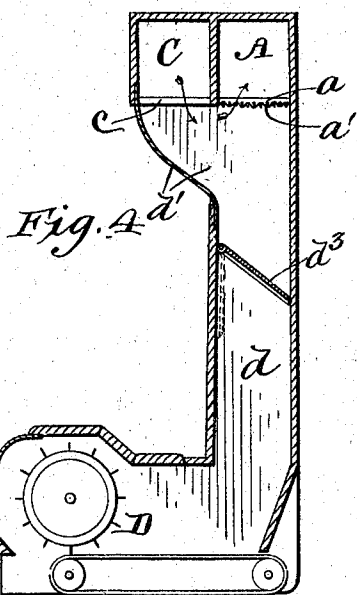
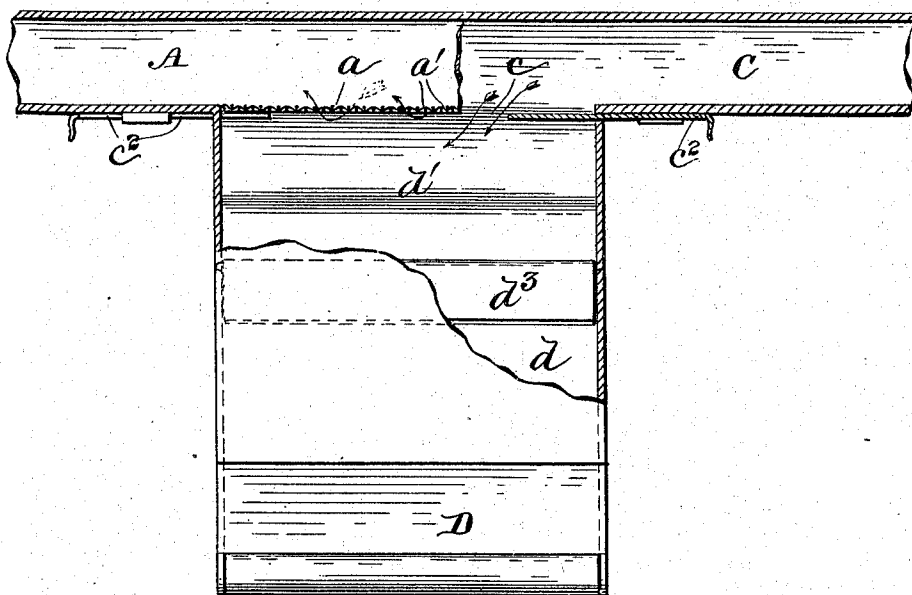
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PNEUMATIC COTTON ELEVATING SYSTEM.

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Fig. 3.



WITNESSES

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# UNITED STATES PATENT OFFICE.

ISAAC T. WASHBURNE, OF SING SING, NEW YORK.

## PNEUMATIC COTTON-ELEVATING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 559,237, dated April 28, 1896.

Application filed May 9, 1895. Serial No. 548,724. (No model.)

*To all whom it may concern:*

Be it known that I, ISAAC T. WASHBURNE, a citizen of the United States, residing at Sing Sing, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Pneumatic Cotton-Elevating Systems; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in pneumatic cotton elevating and feeding systems; and it consists, first, in a novel construction and arrangement of the pneumatic and cotton-feeding tubes of such apparatuses, whereby the two tubes can be laterally adjoined, and in the bottom of one upwardly and in the other downwardly discharging passages can be formed, and whereby, also, the screens of one series of the passages can be placed horizontal, and each pair of the laterally-contiguous passages can be encompassed and inclosed by the upper end of a vertical cotton-gin chute. This arrangement and construction of the tubes with respect to the gin chute or chutes insures positive descent by suction of the cotton into the gin-chutes, a more perfect dropping of the cotton by reason of its gravity into the gin-chute, and at the same time affords perfect facility for the upward passage and escape of the suction-blast after it has compelled the descent of the cotton into the gin-chutes, and in the event of any cotton being carried by said blast against the horizontal screens the same will more readily become detached by its gravity and drop down into the gin-chutes.

My invention also consists in certain constructions, combinations, and arrangements of valves, slides, and cut-off, with the said novel tubes, gin-chutes, and the blast-fan, as will be hereinafter described.

In the accompanying drawings, forming part of this specification, Figure 1 represents a side elevation of the apparatus embodying my invention. Fig. 2 represents a detail horizontal and longitudinal section through both the pneumatic and the feeding tubes of said apparatus. Fig. 3 represents a detail vertical longitudinal section through said tubes and a gin-chute, the rear wall of the pneu-

matic tube being broken away to expose the feeding-tube in the rear. Fig. 4 represents a transverse vertical section of my said apparatus on the line  $x x$  of Fig. 1; and Fig. 5 represents a detail transverse vertical section of a modification of the chute and its connection to the pneumatic and feeding tubes.

A in the drawings represents the pneumatic tube; B, the suction-fan; C, the feeding-tube; D D D, the cotton-feeders, and E the cotton-wagon.

The tube A is open at the end which connects with the fan, and is closed at its opposite end. This tube is preferably made of metal and in a rectangular form, and is connected at its forward end to the casing of any suitable suction-fan B. The under side of the opposite end of said tube is provided with openings  $a a a$ , formed at intervals therein, said intervals corresponding to the distance between the feeders. These openings  $a a a$  are covered by horizontal nettings or screens  $a' a' a'$ , the use of which will be hereinafter explained, and the outer end of said tube A is closed. A valve or damper  $a^2$  is provided in the tube A to cut off the air from the openings  $a$  when so desired.

The cotton-feeding tube C is closed at one end and open at the other, and it is connected to the rear side of the tube A, and is provided in its under side with horizontal feeding-openings  $c c c$ , so arranged as to respectively come in proximity to the openings  $a a a$ . The open front end of said tube C is slightly bell-mouthed, so as to permit the cotton from the wagon to pass freely into said tube.

The tubes A and C are arranged at the same altitude and adjoin each other, as illustrated in Figs. 2 and 4 of the drawings. The tube C, while discharging the cotton in a vertical direction through the passages  $c$ , is made to communicate with respect to the suction-blast with the tube A by means of the vertical passages  $a$ , covered by the screens  $a'$ , as illustrated in Figs. 3, 4, and 5.

The feeders D are arranged vertically on the under side of the tubes A and C, and their upper ends are enlarged, so as to encompass and inclose, respectively, a pair of the openings  $a$  and  $c$  in the bottoms of said tubes. The enlargement of the chutes is effected by giving them a flared construction at top on

one side, as indicated at  $d'$ , and by this means a conducting-surface of a curved or inclined form is secured for the cotton to glide down upon, and thus a tendency of the same to hang in the upper part of the chute is avoided.

In Fig. 4 I have shown the chute  $d$  as directly beneath the netting  $a'$ , with the flaring metal top beneath the opening  $c$ ; but I may arrange a chute  $d^2$  in a reverse position with the flaring metal top beneath the netting  $a'$ . In either form of the chute I provide a pivoted valve  $d^3$ , made of canvas or enameled cloth. I also provide slides  $c^2$  in the bottom of the tube  $C$ , by means of which the size of openings  $c$  may be decreased when desired, or one or the other of the openings into the chutes may be altogether closed. By providing the slides  $c^2$  the entrance to the first tube  $d$  after said tube has been supplied may be shut off and the greater supply allowed to go to the second and third tubes, and in the event of the third tube requiring a more rapid supply the slide of the second tube may be closed, or, if it is desired, the third tube and the one next to it may be closed, and only the supply made to the first tube. Thus it will be seen that all, or any number, or any one of the chutes  $D$  may be supplied, as circumstances may require.

The operation of the apparatus is as follows: The fan is first started and the valve  $a^2$  opened. The suction thus created will cause the valves  $d^3$  to close; as shown in the drawings, and the cotton to be drawn into and along the tube  $C$  and down through the openings  $c$ , as indicated by arrows in the drawings, an equal quantity being drawn through each opening. The cotton and air pass down together through said openings  $c$  and then attempt to escape through the openings  $a$ . The air passes readily through the horizontally-arranged nettings covering said latter openings; but the cotton cannot pass through the meshes of said nettings, and so drops down into the chute and upon the valve  $d^3$ . When a sufficient quantity of cotton is piled upon said valves, the damper  $a^2$  is closed, thus shutting off the suction and allowing the valves  $d^3$  to fall against the sides of the chute and the cotton to descend to the feeders. The operation is then repeated as before.

I secure a very important advantage over existing feeders by constructing the tubes with vertical openings in their bottoms and adjoining these tubes laterally and arranging the nettings horizontally for the cotton to strike against while actuated by the suction, as by this construction the cotton will not stick to the nettings, as would be the case with nettings arranged vertically or diagonally, but will fall into the chutes beneath the same, and thus will not impede the suc-

tion as it would if it piled up upon the netting, as all the draft for the feeding-tube is through said nettings.

I do not limit myself to any certain number of feeders, as my apparatus can be constructed to feed any number without departing from my invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cotton elevating and feeding system, the combination of the pneumatic tube open at one end and closed at the other, and provided with upwardly-discharging openings in its bottom, horizontal screens covering said openings, a cotton-feeding tube open at one end and closed at the other, and adapted to be connected to the source of cotton supply, and provided with downwardly-discharging openings in its bottom, said tube being laterally adjoined directly to the vertical side wall of the pneumatic tube so that its bottom is on the same horizontal plane with the bottom of the pneumatic tube, vertical gin-feeding chutes applied respectively beneath one of each of the screen-covered and the uncovered openings in the two tubes, and having enlargements at their tops which encompass or inclose respectively a screen-covered opening and an uncovered opening, and a fan for creating a suction-blast, substantially as described.

2. In a cotton elevating and feeding system, the combination of the pneumatic tube open at one end and closed at the other, and provided with upwardly-discharging openings in its bottom, horizontal screens covering said openings, a cotton-feeding tube open at one end and closed at the other, and adapted to be connected to the source of cotton supply, and provided with downwardly-discharging openings in its bottom; said tube being laterally adjoined directly to the side wall of the pneumatic tube so that its bottom is on the same horizontal plane with the bottom of the pneumatic tube, vertical gin-feeding chutes applied respectively beneath a screen-covered opening, and an uncovered opening of the two tubes, and having flared enlargements at their tops so as to encompass and inclose, respectively, a screen-covered and an uncovered opening and form inclined conductors, automatic valves in said chutes, slides for regulating the supply to said chutes, at will, a cut-off to the pneumatic tube, and a fan, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

ISAAC T. WASHBURN.

Witnesses:

HARRISON B. WASHBURN,  
JAMES A. HART.